

The Effect of Aerobic General and Sex on Physical Fitness

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THE EFFECT OF AEROBIC GENERAL AND SEX ON PHYSICAL FITNESS

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ABSTRACT

Gymnastics is a very good sport for the body and physical fitness if we do the exercise correctly. This study aims to 1) Improve physical fitness using aerobic exercise, 2) Give effect to the Gymnastics Club KOPKI Jambi City, 3) Provide aerobic exercise treatment to improve physical fitness, 4) Provide aerobic exercise treatment and gender to distinguish the increase in physical fitness. 5) Seeing gender differences to be able to distinguish levels of physical fitness. This experimental study uses a 2x2 factorial design to determine the effect of variables with various main factors, and the combination of variable levels and the effect of interactions between factors on physical fitness levels. With a total sample of 30 men and 30 women aged 20-29 years. Based on the results of the research conducted, the male gender for low impact got the initial test score of 507.7 for the final test of 560.8 then the male high impact on the initial test of 548.2 for the final test of 628, Second, the female gender on the initial low impact test was 439.6 for the final test of 521.4 on the high impact female initial test of 496.9 and the final test was 583.9. Based on the results of research and discussions that have been carried out, it can be understood that: (1). Overall, there is an increase in physical fitness (Vo2Max) at the Jambi City KOPKI Club as evidenced by the significance value smaller than the 0.05 level as shown in the Hypothesis Testing table. (2). There are differences in the increase in physical fitness (Vo2Max) to aerobic exercise and gender at the KOPKI Gymnastics Club Jambi City seen in the number of test results for each group.

Keywords: Aerobic Gymnastics, Gender, Physical Fitness

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INTRODUCTION

Gymnastics is a very good sport for the body and the body if we practice it properly. Gymnastics in Indonesia has a parent organization, the All-Indonesia Gymnastics Association (Persani). According to FIG (*International Gymnastics Federation*), gymnastics is divided into six groups, namely: 1) Artistic gymnastics, 2) Aerobic gymnastics, 3) Acrobatic gymnastics, 4) Rhythmic gymnastics, 5) Trampoline (trampoline gymnastics), 6) Gymnastics (mixed gymnastics). Gymnastics is done in groups with the aim of maintaining fitness so

that the body becomes healthy, fit, and independent, so that in old age the body can still move without limits, not depending on others. Based on the grouping of gymnastics according to FIG, creative gymnastics is included in general gymnastics. Gymnastics is very important to train the immune system, which is beneficial for human survival. Gymnastics as a sport as well as the basis of other sports.

Work results will be more effective if physical fitness is improved, by doing regular and regular exercise, we can achieve an ideal body weight and can improve health and fitness. There are several sports activities that can be done, one of which is aerobics. Aerobic gymnastics is a series of patterned or unpatterned movements accompanied by music that has a certain duration. Aerobic exercise can improve the work of the heart, lungs, and good blood circulation so that the body can work continuously without excessive fatigue. On the other hand, aerobic exercise can minimize fat and keep the body young and healthy. One of the benefits of aerobic exercise is that it can strengthen the body, help the body optimize and refresh the body with the required intensity. The time needed for aerobics starts from 45 to 60 minutes, so everyone can do it, from children to the elderly. Because in exercising, the body must move and have a prime physique. As researchers have observed, many people still look tired when carrying out daily activities, the physical improvement associated with playing or exercising regularly with intensity can be measured.

Based on the observations of researchers, the fitness level of the KOPKI Gymnastics Club in Jambi city is far from the expectations observed when doing gymnastics, so you feel tired quickly. Therefore, researchers really want to help meet the needs of the community by carrying out physical activities experienced, following aerobic exercise to stay physically fit.

METHOD

The research design is an experimental study that uses 2x2 Factorial Design, which is to determine the effect of variables with several main factors, and the



combination of variable levels or the effect of interactions between factors on physical fitness levels. (Tantri et al., 2015) The factorial design consists of 2 (3) independent variables and each variable consists of 2 levels. Does each affect the level of the dependent variable. With the level in each of these factors, as well as whether there will be an interaction between the factors if the level is different, on the influence of physical fitness. This 2-variable design has 2 levels which is called a 2x2 factorial design.

Table 1 Factorial Design 2x2 Physical Fitness

Sex \ Aerobics Gymnastic	Low Impact		High Impact		Total
	Preliminary Test	Final Test	Preliminary Test	Finas Test	
Male	507,7	560,8	548,2	628,2	2244,9
Female	439,6	521,4	496,9	583,9	2041,8
Total	947,3	1082,2	1045,1	1212,1	4286,7

This research was conducted at the Gymnastics Club KOPKI Jambi City which is located at Jl. Perumahan Citraraya City. Ruko Tirta Avenue. Lantai 2 Marketing Point' Muaro, Mendalo Darat, Kec. Jambi Luar Kota, Kabupaten Muaro Jambi. This research was conducted on February 3, 2022 – March 20, 2022.

The population in this study were all members of the Jambi City KOPKI who were male and female as many as 75 people. While the sample of this study were 60 people consisting of 30 male and 30 female.

The data collection technique in this study was carried out twice for the fitness test, namely the initial test and the final test. The initial trial was carried out before aerobic exercise, the treatment was carried out for up to 24 sessions with a frequency of 3 times per week and a duration of 40-45 minutes. Then a final test is carried out to compare the previous data with the initial test by comparing the results. The fitness test is used in the form of a multi-stage fitness test (MFT/Bleep test). This test uses a sound sensor based on the MFT guided music.



Data analysis technique is the method used to obtain data. This data analysis aims to test the acceptance or rejection of the formulated hypothesis. The data analysis technique used in this study is "factorial test" with the condition that the sample must be homogeneous and normal.

RESULT AND DISCUSSION

Normality Test

The normality test for VO2 Max data at the KOPKI Club Jambi City was carried out on (1) the overall data for the men's Low Impact aerobic pre-test and post-test, (2) the overall data for the pre-test and the post-test of the High Impact aerobic test for men (3) the overall data for the pre-test, -test and post-test for Women's Low Impact Aerobics (4). Calculation of the complete data normality test can be seen in the attachment. The summary of the results of the normality test for VO2 Max data in the group can be seen in the following table.

Table 2. Normality Test

Group	N	p (Sig)	Taraf (Sig)	Description
1	15	0,453	0,05	Normal
2	15	0,117	0,05	Normal
3	15	0,076	0,05	Normal
4	15	0,216	0,05	Normal

Description:

Group 1: male pre-test and post-test low impact

Group 2: male pre-test and post-test high impact

Group 3: female pre-test and post-test low impact

Group 4: female pre-test and post-test high impact

Based on the results of the normality test for all groups, the research data showed that all groups obtained a significance value greater than the significance level value, so it can be concluded that the sample came from a normally distributed population and two-way annova test. can be fulfilled.

Homogeneity Test



Testing The homogeneity test of each group was carried out with the Bartlett test using SPSS24 at a significance level of 0.05. This Bartlett test looks at the test results table to see the M value in the box obtained. In this uniformity test, the researcher checks whether the data results are uniform. If the value of sig > 0.05, then sig < 0.05, then the pre-test and post-test data values are assumed to be uniform. After that, the heterogeneous value data before and after the test were different. The results of the pre-test and post-test Vo2Max homogeneity are listed in the following table.

Table 3. Homogeneity Test

Group	Taraf Sig	Box's M	Sig	Description
1	0,05	0,113	0,741	Homogen
2	0,05	0,156	0,698	Homogen
3	0,05	2,220	0,143	Homogen
4	0,05	0,594	0,449	Homogen

Description:

Group 1: male pre-test and post-test low impact

Group 2: male pre-test and post-test high impact

Group 3: female pre-test and post-test low impact

Group 4: female pre-test and post-test high impact

Based on the homogeneity test table above, all Vo2Max test group data at the KOPKI Gymnastics Club Jambi City are homogeneous so that all Vo2Max test data can be fulfilled.

Hypothesis Test

In this study using hypothesis testing using (Two Way Anova) with the SPSS 24 application. To test the hypothesis in this study, a comparison between the confidence level value of 0.05 was carried out. If Sig > 0.05 then the research data has no influence or there is no difference, if Sig < 0.05 then the research data has an influence or there is a difference. The calculation results are taken from the SPSS 24 table, namely the *Test of Between Subject Effect* table as follows:

Tabel 4. Hypothesis Test



No.	Keterangan	F _h	Taraf (Sig)	p(Sig)	Kesimpulan
1	Sex	17,607	0,05	0,000	There is a difference
2	Aerobics Gymnastic	22,131	0,05	0,000	There is a difference
3	Sex* Aerobics Gymnastic	0,060	0,05	0,806	No interaction

Based on the Vo2Max hypothesis testing table for the KOPKI Gymnastics Club, Jambi City, the data obtained are as follows:

1. The gender significance value is $0.000 < 0.05$, so it can be concluded that there is a difference based on gender based on the results of the Vo2Max Club KOPKI Jambi City.
2. The significance value of Aerobic Gymnastics (Low Impact and High Impact) is $0.000 < 0.05$ so that it can be concluded that there is a difference based on the Vo2Max results of the Jambi City KOPKI Club.
3. The significance value of sex* Aerobic Gymnastics is $0.806 > 0.05$, so it can be concluded that there is no interaction between gender and aerobic exercise in determining Vo2Max results at the Jambi City KOPKI Club.

Based on the analysis of hypothesis testing using two-way ANOVA on the SPSS 24 application, there are differences in the results of Vo2Max based on gender and aerobic exercise at the KOPKI Club of Jambi City as evidenced by the results of hypothesis testing in the test table of between subject effect with these differences in results. it can be concluded that there is an influence on the physical fitness (Vo2Max) of the Jambi City KOPKI Club.

Aerobic exercise has been proven to be very effective in improving physical fitness. Based on the results of the analysis, in the VO2MAX test conducted by members of the Kopuki Club, the average value of the mileage data increased from the results before and after the test. It also shows that the movements they perform have the effect of increasing the fitness of both male and female members. This is also done continuously so that the activities programmed into 16 sessions given by the researchers influence the cardiopulmonary endurance system (VO2 Max) and aerobic exercise has an effect on increasing VO2 Max because it can have a positive adaptive effect.

In this study, we will discuss the results of aerobic exercise (Low Impact and High Impact) and gender on the physical fitness of the Jambi City KOPKI Club. The results of this study refer to the existing theories in theoretical studies (Jusuf, 2013).¹ The body can be strengthened through physical activity and regular movement. Physical fitness is the body's ability to work and perform daily activities without feeling tired. That is, the body is ready for intense activity. Based on the explanation of the theory, it can be accepted by researchers because the exercises provided by researchers have been programmed and measured by giving a portion of exercise as many as 16 meetings and providing low impact aerobics with a beat (speed of songs) of 100-120 bpm then also giving high impact with a beat (song speed) of 130-160 bpm with the same level for boys and girls. Therefore, it can be concluded that¹ the results of the research on the effect of aerobic exercise and gender on physical fitness at the Jambi City KOPKI Club are acceptable. Then the researchers made a comparison with the relevant research belonging to Experiments (Sinaga, 2008) students of FMIPA UNIMED Medan entitled "The effect of aerobic exercise at various temperatures for physical fitness was measured based on VO2max capacity (experiment with FMIPA UNIMED Medan students aged 18-20 years, high aerobic exercise). impact and low impact). The research was successfully carried out with the hypothesis that aerobic exercise affects physical fitness. and there is an effect on temperature during aerobic exercise on physical fitness as well as that done by researchers, researchers succeeded in conducting research because the hypothesis obtained was that there was an effect of gender on physical fitness and there was an influence on aerobic exercise on physical fitness. (Ninawati, 2013) research entitled "The Effect of Aerobic Gymnastics on V02 Max Body Mass Index and Fat Percentage on Housewives in Karanggondang Hamlet, Kradenan Village, Srumbung District, Kab. Magelang".³ This research is quasi-experimental research with one group pretest posttest design model, namely giving treatment to one experimental group. The treatment given by the researcher was 16 times with a frequency of 3 times a week, for 6 weeks. The population used in this study was the members of the

Karanggondang hamlet **housewives' gymnastics group**, amounting to 42 people. In this study, sampling using target sampling. The sample of this study that met the criteria based on the value of pre-test-post-test VO2 Max $p > 0.69$, pre-test-post-test BMI $p > 0.864$, and body fat percentage pre-test-post-test $p > F$ test, covering more than 22 subjects who were declared homogeneous. 0.792. The tools used in this study were a 12-minute cardiopulmonary endurance test (VO2 Max), weight (kg) divided by height (M) ², and a fat measurement test using a skinfold caliper. Determine body fat percentage. Data analysis using t-test at a significance level of 0.05. The results showed that there was a significant effect on VO2max, obesity index, and body fat percentage in the experimental group that received aerobic exercise treatment.

Physical fitness is interrelated with aerobic exercise and gender because aerobic exercise has intensity in songs such as in low impact movements, participants are required to do slow movements with slow music, but the movement of all limbs moves according to the rhythm of the music. Then in high impact movements they are demanded with very fast movements so that the resulting movements are in accordance with a fast rhythm. In low impact and high impact movements, without realizing it, they have made measurable and regular physical activities so that they can physically train men or women. By doing aerobic exercise activities can also improve physical fitness in men and women with exercises carried out by researchers as many as 16 meetings, the physical fitness of men and women can increase, if the exercise is not carried out routinely, the physical fitness of men and women can increase. men and women did not increase.

CONCLUSION

1 Based on the results of the study, it can be concluded that overall, there is an increase in physical fitness (Vo2Max) at the Jambi City KOPKI Club as evidenced by the significance value smaller than the 0.05 level seen in the Hypothesis Testing table and there is a difference in increasing physical fitness

(Vo2Max) to aerobic exercise and other types of exercise. Gender at the Gymnastics Club KOPKI Jambi City can be seen in the number of test results for each group. Therefore, there is an increase in physical fitness by using aerobic exercise by also distinguishing gender. Researchers must also be able to increase from the existing population and sample so that the improvements that occur can be useful and visible to the community.

IMPLICATION

The study conducted is an experimental study that can use the results of the study as a criterion in considering or determining aerobic exercise (low and high impact) and gender and must be applied to a sports education environment. In addition, it is hoped that it will reduce the problems faced by stakeholders in the field during the exercise. We can be sure that the results of this study have positive implications for those involved. From the problems that researchers have observed in this field, the results of the research have a direct impact on the intended party. For research that can be discussed in the pretest section, the results obtained are not optimal. This means that affected people need new and exciting forms of exercise to improve their fitness.

The disclosure of the results of this study on physical fitness can strengthen a statement that the Jambi City KOPKI Gymnastics Club is very responsive to the form of exercise presented by the researcher. Therefore, after the students of the Jambi City KOPKI Club did their exercises, they were given the motivation to maintain their modern fitness at the end of each exercise.

SUGGESTION

Based on the conclusions above, there are several suggestions that can be submitted, namely:

1. For members of the Jambi City KOPKI Club who still do not have good physical fitness, they can improve it by means of regular exercise, one of which is aerobic exercise (Low Impact and High Impact).



2. For the training staff, it is recommended that in providing training they can choose a training method that is truly suitable according to the characteristics of the material to be taught and the characteristics of the students. In addition to using the exercise method, it is necessary to consider the physical fitness of the students so that they can actually improve the results of the exercise.
3. Additional researchers need to study more samples and populations and include them in the comparison group.
4. Researchers interested in conducting similar studies should include other variables that have a significant impact on training methods and the subject of the extended study and consider the psychological factors of athletes for research and development.

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